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REC'D 8/25/97
EB.

August 21, 1997

Mr. Barry Cohen
Ciba Specialty Chemicals, Inc.
P.O. Box 70
Toms River, NJ 08754

RE: Pawtuxet River Media Protection Standard for Xylenes in Groundwater

Dear Barry:

In response to your request last week, we have reviewed the media protection standard (MPS) for xylenes in groundwater and determined that it should be changed from 38 µg/l to 76 µg/l. This level is based on protection of invertebrates in river sediments, making the conservative assumption that groundwater concentrations equal sediment pore water concentrations.

Briefly, MPS values are derived from three types of studies. Ideally, chronic toxicity studies are used. This is because an MPS is designed to be protective of ecological receptors exposed throughout their entire lives at this concentration. The second choice of study duration would be a subchronic study. If appropriate chronic or subchronic studies are not available, acute toxicity studies are a third choice used to derive MPS values. According to the conversion method for acute-to-chronic exposure approved by USEPA Region I described in the Aquatic Baseline Ecological Risk Assessment for the Cranston Site, the results of an appropriate acute effective concentration (EC_{50}) study are divided by a factor of 50 to estimate a chronic protective concentration to be used as an MPS. Similarly, the results of an appropriate acute lethal concentration (LC_{50}) study are divided by 100 to derive the MPS.

To revise the MPS for xylenes we first searched current data bases to make sure that chronic or subchronic studies, which would be preferable, were not available for xylenes; there were none. We then examined data bases of acute studies for potential use in deriving MPS values for xylenes, including the literature source used for the original MPS. The revised MPS is based on the same study as the original MPS. This was an acute study using *Daphnia magna*. Acute studies using these short-lived organisms are approximately 24 hours duration and chronic studies are about 7 days. In reviewing the original literature source, we discovered that this (acute) study was based on an EC_{50} of 3.8 mg/l (3,800 µg/l) and not an LC_{50} as the authors indicated in a summary table in their paper. Therefore, we have revised the MPS value to 76 µg/l. We also verified that the EC_{50} study resulting in a value of 3.8 mg/l was comparable to xylene toxicity values obtained from other acute studies.

Barry, if you have questions or need additional information please call me or Rich McLean.

Sincerely,

Thomas J. Siard, M.S.
Risk Assessor/Toxicologist

cc:
R.B. McLean